

UNITED STATES DEPARTMENT OF THE INTERIOR

(200)

R290

no.83-300A

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA

COLLEGE OBSERVATORY

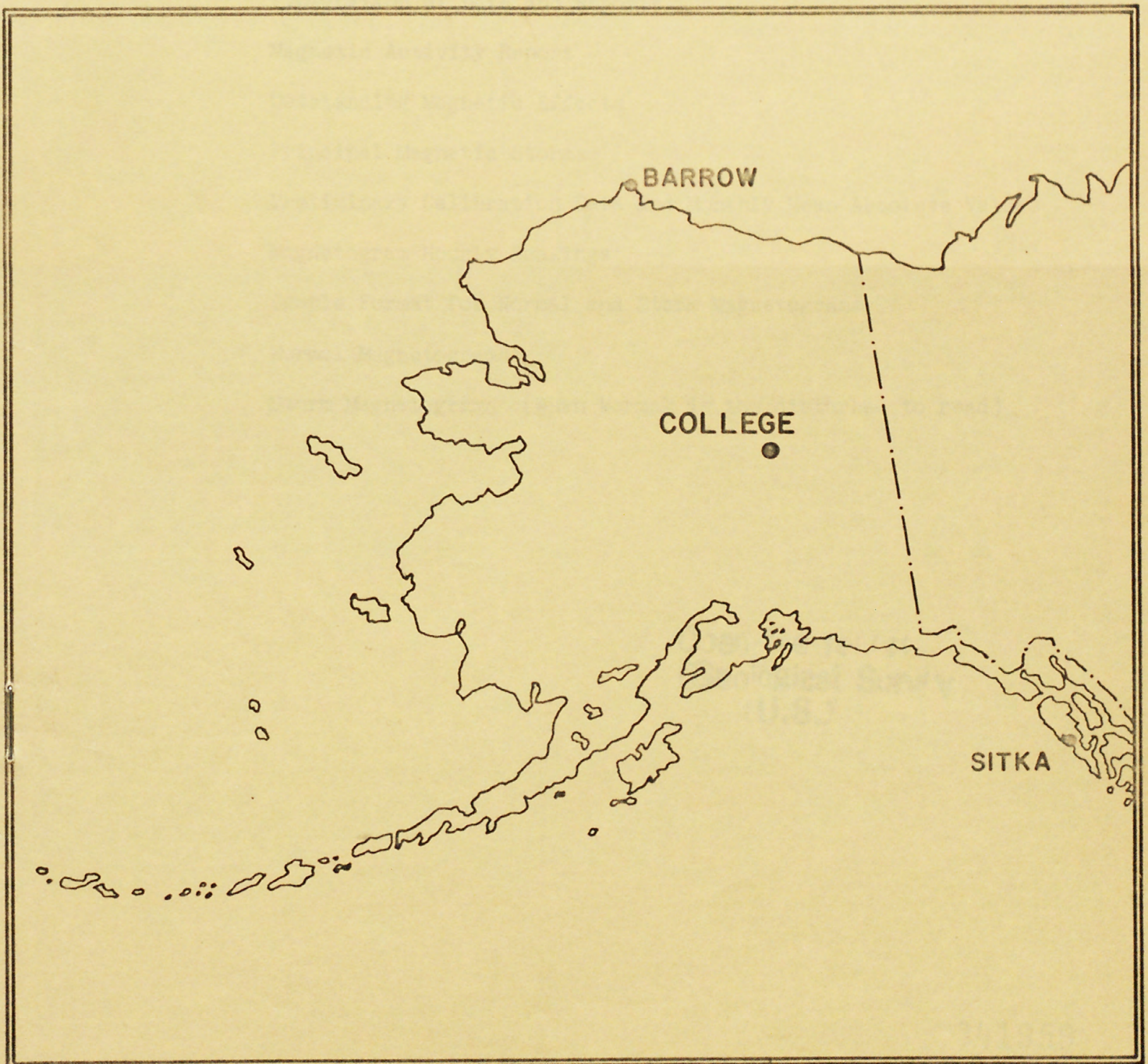
FAIRBANKS, ALASKA

*twanala*

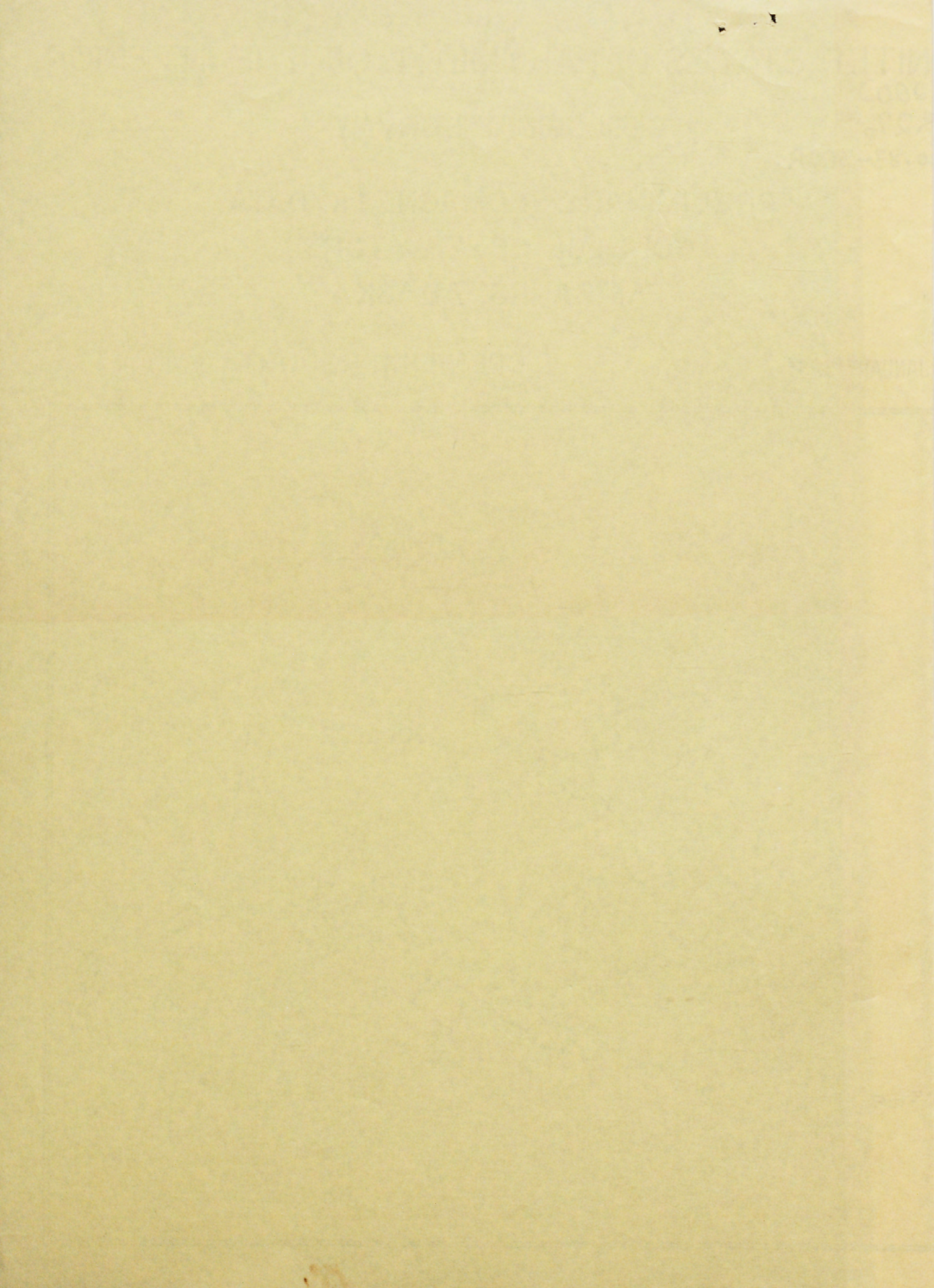
JANUARY 1983

OPEN FILE REPORT

83-0300A









THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY, WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, L.Y. TORRENCE, T.K. CUNNINGHAM AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF GLOBAL SEISMOLOGY AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

Explanation of Data and Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data and Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal and Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

Open-file report  
(Geological Survey  
(U.S.))



# COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

## EXPLANATION OF DATA AND REPORTS

### INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory  
U.S. Geological Survey  
500 Yukon Drive  
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A  
NOAA D63, 325 Broadway  
Boulder, Colorado 80303

### GEOMAGNETIC DATA

Normal, Storm and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available, are mean hourly scalings, K-Indices, selected magnetic phenomena reports and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

#### Magnetic Activity

The K-Index: The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK: The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 < 1000	6	80
1000 < 1650	7	140
1650 < 2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C: To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1, if it is moderately disturbed; C=2, if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0 ≈ 11	0
11 ≈ 50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

### OBSERVATORY LOCATION

The College Observatory, operated by the U.S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64° 51.6'N  
Geographic longitude.....147° 50.2'W  
Geomagnetic latitude.....+64.6°  
Geomagnetic longitude.....+256.9°  
Elevation.....200 meters

#### Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal and Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

#### Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

#### Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H and Z elements. The Value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

#### Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

#### Absolutes, Base-lines and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D = B_D + d \cdot S_D$ ;  $H = B_H + h \cdot S_H$ ;  $Z = B_Z + z \cdot S_Z$   
where D, H and Z are absolute values;  
 $B_D$ ,  $B_H$  and  $B_Z$  are base-line values;  
 $S_D$ ,  $S_H$  and  $S_Z$  are scale values;  
and d, h and z are scalings in millimeters.

**MAGNETIC ACTIVITY**

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

JANUARY 1983

DATE	K-INDICES									AK	TIME SCALE ON MAGNETOGRAMS  20 mm/hr
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		
1	1	3	3	2	2	2	2	2	17	09	SUDDEN COMMENCEMENTS d h m
2	1	1	1	3	5	1	1	1	14	10	
3	0	0	3	5	6	4	2	1	21	23	
4	1	0	3	5	6	3	1	1	20	21	
5	0	0	2	3	5	2	2	0	14	11	
6	0	0	1	1	2	0	0	0	04	02	
7	0	0	1	2	4	0	0	0	07	05	
8	0	0	0	1	5	1	2	1	10	08	
9	2	1	3	5	3	7	5	3	29	36	
10	4	7	5	7	4	3	3	1	34	52	
11	0	2	2	1	2	2	2	3	14	07	
12	3	3	4	5	5	3	2	1	26	22	
13	1	1	2	0	1	4	2	2	13	07	
14	1	1	3	3	5	2	2	1	18	13	
15	2	2	4	4	4	7	4	2	29	34	
16	2	4	4	6	5	6	5	2	34	41	
17	2	2	4	6	7	5	4	3	33	44	
18	4	3	4	7	6	5	4	4	37	49	
19	2	3	3	5	6	5	2	1	27	28	
20	2	2	3	5	3	2	3	2	22	15	
21	2	2	1	2	4	3	2	1	17	10	
22	1	1	4	5	6	1	1	1	20	21	
23	0	1	2	3	2	0	2	3	13	07	
24	3	3	3	4	5	5	4	4	31	28	
25	3	3	3	5	4	5	5	2	30	28	
26	1	2	3	5	5	4	3	1	24	21	
27	1	2	2	3	3	2	4	1	18	11	
28	1	0	2	1	4	5	2	3	18	14	
29	3	1	1	5	4	7	4	3	28	35	
30	2	2	3	7	5	4	2	2	27	32	
31	3	3	1	3	5	4	4	2	25	20	

POSSIBLE SOLAR-FLARE  
EFFECTS BASED ON  
INSPECTION OF GRAMS  
ALONE (WITHOUT  
REFERENCE TO DATA  
FROM OTHER SOURCES)

BEGIN

END

d h m

d h m

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D

683.8

3.73

2550

H

321.7

7.78

2500

Z

(mm)

( $\gamma$ /mm)

(to nearest 10 $\gamma$ )

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

# OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY  
COLLEGE, ALASKA

MONTH	YEAR
JANUAURY	1983

DATE	TIME U.T.	NATURE OF PHENOMENON <sup>1</sup>	REMARKS
07	15xx	pg	
09	1544	ssc*	
10	17xx	pc5	Continues for approximately 38 hours
29	0917	ssc*	
IDENTIFIED BY: JEP		VERIFIED BY: EAS	

1. NATURE OF PHENOMENON: ssc, ssc\*, si, si\*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500  
(11/73)

PRINCIPAL MAGNETIC STORMS

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA  
JANUARY 1983

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS  
ENVIRONMENTAL DATA SERVICE, NOAA  
BOULDER, COLORADO 80302 U.S.A.

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H( $\gamma$ )	Z( $\gamma$ )	day	(3 hr - period)	K	D(')	H( $\gamma$ )	Z( $\gamma$ )	day	hr
CO	64 <sup>0</sup> .6 N	09	1544	s.c.*	-20	-455	-130	09	6	7	406	1510	1400	10	20
								10	2, 4	7					
		15	06XX	..	..	..	..	15	6	7	336	1540	950	19	19
		17						5	7						
		18						4	7						
		29	0917	s.c.*	..	+37	..	29	6	7	212	1230	760	30	19
								30	4	7					

## NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 1-1-83	2400 U.T., 1-31-83	1.0/mm	3.78/mm	27° 47.0 E
H	0000 U.T., 1-1-83	2400 U.T., 1-9-83	7.88/mm		127498
	0000 U.T., 1-10-83	2400 U.T., 1-16-83	"		127418
	0000 U.T., 1-17-83	2400 U.T., 1-31-83	"		127488
Z	0000 U.T., 1-1-83	2400 U.T., 1-9-83	7.78/mm		551608
	0000 U.T., 1-10-83	2400 U.T., 1-16-83	"		551688
	0000 U.T., 1-17-83	2400 U.T., 1-31-83	"		551608

## STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 1-1-83	2400 U.T., 1-31-83	7.9/mm	29.68/mm	23° 43.7 E
H	0000 U.T., 1-1-83	2400 U.T., 1-9-83	43.98/mm		114978
	0000 U.T., 1-10-83	2400 U.T., 1-16-83	"		114858
	0000 U.T., 1-17-83	2400 U.T., 1-31-83	"		114988
Z	0000 U.T., 1-1-83	2400 U.T., 1-9-83	48.48/mm		540748
	0000 U.T., 1-10-83	2400 U.T., 1-16-83	"		541068
	0000 U.T., 1-17-83	2400 U.T., 1-31-83	"		541168

## RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D				
H				
Z				

## MONTHLY MEAN ABSOLUTE VALUES\*

D	H	Z
27° 55.9 E	129478	553858

\* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JAN 1, 2, 5, 6, 7, 8, 11, 13, 21, 23



MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR  
Geological Survey, Seismic Division  
Denver Federal Center  
DENVER, CO 80225OBSY. YEAR MONTH ELEMENT  
CO 83 JAN DValues are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 11 of the same universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Time	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
			01	40	59	67	57	44	36	26	73	73	82	56	54	01	73	94	103	117	108	81	81	88	69	49	61	58	1649
			02	76	73	72	75	79	82	75	68	79	78	72	71	02	146	218	186	156	146	126	104	74	77	38	62	74	2307
			03	70	68	72	78	85	82	78	81	89	125	34*	10*	03	257*	137*	-37*	175	189	129	131	81	69	78	67	64	2212
			04	71	78	74	88	88	85	90	92	136	-101*	92	70	04	336*	213	158	230	193	177	146	112	75	52	60	70	2685
			05	80	84	82	80	81	85	82	86	99	89	86	123	05	192	225	114	91	122	85	113	105	90	85	77	71	2427
			06	71	79	83	81	82	90	91	82	120	87	74	81	06	110	146	124	125	133	151	149	162	124	102	91	79	2517
			07	69	63	76	79	79	81	90	90	89	68	104	112	07	140	142	130	98	94	117	113	119	111	109	97	73	2343
			08	60	58	66	50	63	61	58	88	83	77	67	80	08	229	196	136	86	92	136	98	30	97	102	70	51	2134
			09	37	22	42	64	68	34	42	66	85	72	32*	112	09	78	107	111	127*	882*	465*	254	138	190	153	74	58	3333
			10	72	167	107	-103*	-71*	-309*	-285*	-174*	1*	-118*	64*	-57	10	55	234	54	124	67	74	79	94	88	78	71	72	404
			11	73	77	71	56	75	77	72	78	76	82	82	85	11	91	97	98	98	98	104	102	110	108	96	103	95	2106
			12	76	93	93	59	60	50	140	69	84	112*	84	85	12	108	178	108	124	100	108	93	112	118	83	77	71	2285
			13	77	78	84	78	41	66	82	112	87	92	84	98	13	88	125	138	65	76	90	71	78	113	97	70	60	2050
			14	72	75	62	68	66	68	72	90	71	90	92	134	14	172	196*	129	214	150	123	89	116	124	120	45	35	2473
			15	42	38	58	65	41	54	101	107	98	103	122	174	15	161	121	188	451*	188*	121	194	31	23	43	86	59	2669
			16	49	68	65	68	60	155	69	46	171	82	243*	45*	16	168*	158	172	220*	133	223	85	33	87	87	75	72	2654
			17	55	48	91	87	82	74	107	104	108	153	323*	204*	17	-34*	567*	148	222	72	102	136	26	-42*	55	67	37	3112
			18	-19	71	85	62	70	44	99	168	137	69	-335*	331*	18	77*	276*	355*	251	119	72	95	92	110	-42	38	83	2308
			19	78	86	72	48	56	76	153	61	94	228	103	115	19	126	243*	331*	163	133	53	93	110	95	93	75	64	2749
			20	64	49	49	80	96	93	148	100	157	80	42	79	20	92	70	67	85	91	94	106	93	47	-12	53	66	1889
			21	69	61	61	60	44	79	90	83	99	100	106	117	21	116	143	86	37	26	82	113	108	97	93	84	70	2024
			22	60	60	68	66	70	60	114	92	92	22	87	112	22	117	112	96	71	84	92	96	115	96	112	101	75	2070
			23	66	69	62	67	78	72	62	80	135	126	83	92	23	103	89	80	80	78	96	113	134	117	162	18	-56	2006
			24	-3	5	2	3	-8	36	-38	72	59	66	103	94	24	54	96	162	189	338	179	123	164	85	52	72	-55	1850
			25	4	20	44	38	19	26	50	62	114	89	288	34	25	276	244	166	99	96	180	220	84	98	89	69	50	2459
			26	72	69	34	39	39	82	90	82	74	95	160	60	26	106	137	169	202	170	256	153	114	101	92	84	58	2538
			27	56	57	53	40	40	40	22	37	63	66	19	78	27	84	110	106	106	121	146	191	164	91	106	101	82	1979
			28	77	79	61	70	72	75	73	55	77	61	70	72	28	85	105	225	339	269	171	205	146	113	87	84	-72	2599
			29	-19	8	35	37	40	60	75	66	63	68	63	42	29	68	151	240	362*	577*	528*	152	85	96	49	47	55	2948
			30	60	54	37	45	51	36	42	103	225	23	100*	44*	30	123*	172	84	85	88	126	82	106	71	54	52	40	1903
			31	23	67	49	52	113	89	57	105	85	74	80	69	31	128	157	147	223	162	172	135	9	1	12	-55	-24	1930

SCALED BY  
CHECKED BY  
SIGNS REVIEWED BY  
PUNCHED BYLYT, TKC  
TKC, JEP  
JEPPreliminary base-line and scale values:  
Interval Beginning

Base-line Value

Scale Value

() Interpolated

[] Significant portion of hour interpolated.

□ No record; or no values available because of faulty record.

[] Scaling uncertain because of magnetic storm.

&lt;&gt; Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

\* Derived from STORM Mgh., converted to Normal Mgh.

MONTHLY SUM 70612

MONTHLY MEAN 95

DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR  
Geological Survey, Paleogeographic Division  
Denver Federal Center  
DENVER, CO 80225

OBSE. YEAR MONTH FILE-MENT  
CO 83 JAN Z

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 11 of the GMT universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Time	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	307	314	307	309	334	368	401	396	337	326	308	328	324	335	310	298	297	289	286	288	298	300	306	315	7681
			02	321	314	307	305	310	309	306	310	320	319	315	303	254	203	156	267	277	289	288	264	272	282	300	309	6900
			03	310	310	307	304	303	304	306	329	272	269	248	322	546*	572*	232	182	281	306	296	298	304	314	312	316	7543
			04	316	319	310	308	306	312	320	332	271	55	237	259	237	-16	117	181	175	223	244	269	275	278	300	315	5943
			05	321	314	313	307	306	306	307	311	322	271	296	260	212	312	173	219	276	275	280	284	293	300	302	303	6663
			06	304	304	302	299	298	298	299	299	321	305	271	274	246	210	222	260	271	268	265	270	272	281	286	291	6716
			07	297	296	295	296	298	299	300	299	301	310	314	301	290	254	223	266	301	302	296	297	295	299	297	296	7022
			08	294	296	300	303	306	312	320	314	300	300	297	302	234	142	199	272	286	285	264	190	231	256	279	294	6578
			09	299	314	322	313	303	314	356*	381	383	324	201	218	300	303	286	238	404*	-38*	62	242	214	148	175	208	6270
			10	268	203	12	105	69	-396*	-346*	-28	199	156	299	176	260	405	342	336	338	312	303	305	296	298	304	309	4525
			11	310	310	308	299	308	302	301	302	301	303	300	300	300	304	297	298	296	298	296	299	296	292	295	287	7202
			12	294	296	296	299	317	338	344	326	306	29	122	244	275	292	250	250	266	259	289	288	298	276	284	290	6568
			13	298	300	309	310	312	333	320	317	298	294	279	260	221	230	245	172	172	182	179	210	256	263	265	292	6317
			14	308	310	302	301	308	305	334	310	339	338	314	262	269	261	192	158	211	258	233	246	270	279	285	291	6704
			15	305	319	333	325	324	362	369	305	254	236	267	263	260	221	286	301*	-236	-30	138	196	188	256	309	316	5857
			16	310	310	319	325	319	350	326	329	305	289	383	198	462	493	409	483*	312	70	141	240	271	304	306	317	7580
			17	322	325	340	328	326	333	343	321	286	193	245	596*	565*	312*	275	280	258	256	241	228	228	270	315	331	7517
			18	353	367	315	338	357	343	329	312	280	321	230*	212*	212	477*	401*	260	261	288	329	296	322	324	320	329	7576
			19	328	336	327	326	329	362	325	326	333	301	260	274	292	421*	52	97	140	237	272	304	306	306	304	310	6868
			20	311	316	328	339	333	337	319	335	321	172	240	282	280	268	272	271	270	287	303	282	295	291	306	320	7078
			21	325	330	323	325	332	370	353	343	334	321	285	261	240	237	233	226	250	281	297	296	290	294	304	305	7155
			22	313	316	318	309	305	318	326	239	316	289	221	177	167	176	235	284	295	290	296	294	290	312	313	311	6710
			23	309	308	304	305	322	316	321	331	331	282	298	268	258	268	269	285	290	297	297	296	290	313	290	288	7136
			24	328	329	339	331	369	364	407	396	310	324	311	316	247	298	272	198	254	199	239	275	281	303	317	322	7358
			25	374	336	309	302	320	361	356	358	358	326	224	76	162	373	454	253	103	228	170	213	264	283	290	300	6793
			26	310	320	332	329	334	348	344	344	327	330	127	199	247	301	222	230	225	280	229	206	267	280	292	292	6705
			27	304	297	300	304	314	317	337	354	380	359	335	341	317	282	256	285	294	290	237	177	225	256	280	289	7130
			28	298	297	296	296	297	297	298	307	325	322	303	299	295	282	213	167	132	214	273	260	238	263	291	278	6541
			29	315	322	316	309	305	314	320	322	325	284	257	311	260	237	297	568*	441*	-87*	23	241	272	287	292	303	6834
			30	314	302	298	314	310	323	326	286	290	264	341*	479*	139*	179	266	275	272	241	291	309	282	290	299	310	7000
			31	317	337	331	336	380	363	368	367	346	299	293	292	254	313	137	148	184	221	143	97	180	223	226	254	6409

SCALED BY: LYT, TKC  
CHECKED BY: TKC, JEP  
SIGNS REVIEWED BY: JEP  
PUNCHED BY:

Preliminary base-line and scale values:  
Interval Beginning Base-line Value Scale Value

( ) Interpolated  
[ ] Significant portion of hour interpolated.  
[ ] No record; or no values available because of faulty record.  
\* Derived from STORM Mghp., converted to Normal Mghp.  
[ ] Scaling uncertain because of magnetic storm.  
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM: 211,079  
MONTHLY MEAN: 284  
DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR  
Geological Survey, Geologic Division  
Denver Federal Center  
DENVER, CO 80225

OBSY. YEAR MONTH ELEMENT  
00 83 JAN H

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 11 of the 0000 universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	Ten	Min	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM		
				01	262	267	280	305	291	339	400	317	304	298	281	267	01	271	274	257	243	252	242	239	251	248	244	237	241	6610
				02	256	258	262	270	264	260	267	276	264	265	262	240	02	169	-35	194	277	267	278	268	273	269	260	257	252	5873
				03	255	258	254	263	270	263	262	289	381	346	225	-11	03	-246	-501	-201	320	309	340	289	274	268	262	256	253	4678
				04	256	257	263	264	274	271	274	296	268	19	194	55	04	-201	-93	168	190	241	298	298	289	266	257	269	261	4954
				05	262	261	262	270	273	274	270	260	280	266	252	176	05	39	-47	11	294	270	265	271	275	270	264	261	260	5539
				06	261	265	269	274	273	271	270	271	272	272	253	259	06	234	201	263	274	275	275	280	285	273	262	261	261	6354
				07	262	261	276	282	287	287	284	285	290	296	284	262	07	154	109	232	284	289	289	290	282	275	266	262	260	6348
				08	269	275	282	281	284	294	295	296	296	294	286	266	08	140	62	230	300	290	276	253	247	293	271	264	248	6312
				09	249	292	296	311	311	322	415	372	351	301	140	155	09	329	278	261	110	-948	-366	167	319	242	243	258	284	4692
				10	242	230	188	-49	-15	-394	81	-9	255	93	86	285	10	262	133	192	185	172	224	260	251	246	256	246	247	3667
				11	249	252	256	278	266	269	277	264	264	257	256	252	11	250	254	258	262	263	266	261	260	264	258	244	275	6255
				12	263	266	264	279	284	363	371	292	281	-82	86	273	12	186	-16	146	252	242	234	270	266	256	258	257	263	5544
				13	262	261	275	272	286	280	278	300	280	266	262	253	13	242	250	248	77	231	228	248	267	269	235	232	239	6041
				14	257	272	272	269	266	274	310	307	308	294	248	172	14	100	-191	52	254	286	285	234	260	284	273	245	257	5608
				15	231	269	299	302	315	306	322	395	252	133	44	138	15	164	223	88	-563	-151	221	180	200	187	260	272	249	4336
				16	262	279	272	264	302	408	358	344	381	282	-196	103	16	-131	-134	30	-139	-95	-17	168	328	306	279	272	274	4200
				17	265	282	308	331	292	284	284	302	262	88	-394	-253	17	-643	-366	192	32	265	210	190	94	190	264	261	236	2976
				18	252	292	276	312	310	336	364	393	338	240	-473	-479	18	-258	-229	-219	44	226	246	282	271	232	214	262	261	3493
				19	260	270	276	271	273	340	320	290	338	288	149	188	19	48	-446	-349	94	250	275	300	287	281	260	256	256	4775
				20	253	245	288	304	303	284	302	276	268	156	206	239	20	202	232	233	233	246	274	260	199	201	220	245	263	5932
				21	265	267	265	280	287	266	285	286	275	266	240	221	21	225	194	109	199	247	282	274	238	258	254	246	246	5975
				22	251	262	271	277	279	284	362	328	320	41	163	76	22	-191	-117	267	291	281	280	282	276	267	268	260	252	5330
				23	258	260	267	270	269	291	289	282	296	292	268	216	23	232	256	269	275	281	287	290	288	277	240	211	221	6385
				24	232	250	324	327	380	405	411	361	416	345	231	251	24	282	295	106	106	62	236	248	272	310	250	222	205	6527
				25	291	320	270	298	313	338	331	343	316	265	217	9	25	-169	-120	-214	-186	57	278	131	305	276	248	232	249	4398
				26	258	276	268	295	300	315	319	272	270	313	169	204	26	198	-157	138	174	257	191	181	252	268	261	256	264	5542
				27	259	265	265	266	285	311	339	359	349	368	354	302	27	268	201	251	276	250	233	142	144	278	274	262	259	6560
				28	259	260	264	270	269	269	275	295	311	273	262	263	28	254	252	89	-116	138	240	238	243	272	251	202	253	5586
				29	270	305	288	279	287	290	298	316	328	324	298	155	29	61	206	132	-228	-607	-115	255	333	303	275	252	258	4563
				30	270	270	275	276	284	300	361	371	299	352	-41	-505	30	-52	141	161	170	258	258	300	287	269	268	260	226	5058
				31	286	280	281	308	342	299	300	293	295	271	269	218	31	185	-21	32	139	202	151	6	142	194	188	208	242	5110

SCALED BY: LYT, TXC  
 CHECKED BY: TJC, JEP  
 SIGNS REVIEWED BY: JEP  
 PUNCHED BY:

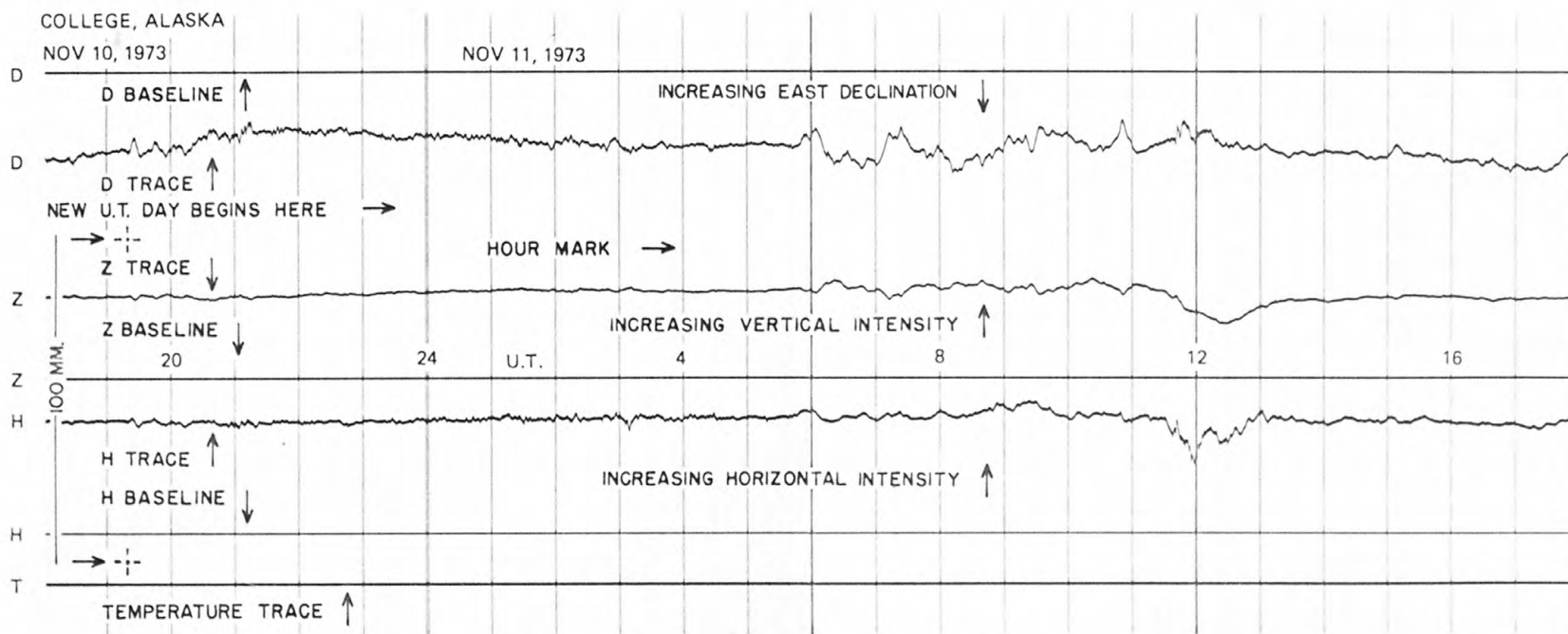
Preliminary base-line and scale values:  
 Interval: \_\_\_\_\_  
 Beginning: \_\_\_\_\_  
 Base-line Value: \_\_\_\_\_  
 Scale Value: \_\_\_\_\_

( ) Interpolated  
 Significant portion of hour interpolated.  
 No record; or no values available because of faulty record.  
 \* Derived from STORM Mmph., converted to Normal Mmph.  
 Scaling uncertain because of magnetic storm.  
 <> Record all hours for part or all of hour; if value is given, care was estimated for missing part.

MONTHLY SUM: 165221  
 MONTHLY MEAN: 222  
 DATES WITH GAPS:

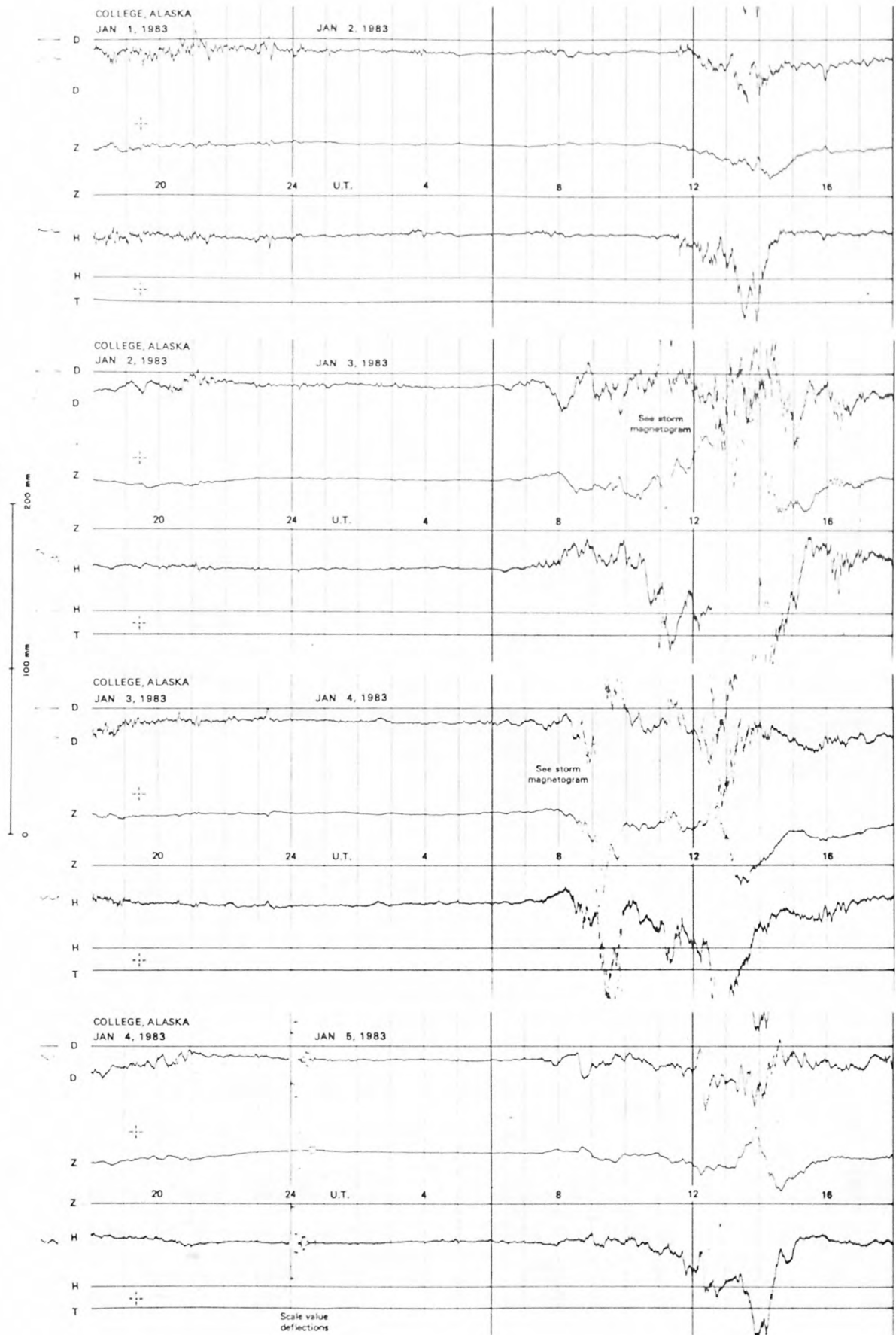


# FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

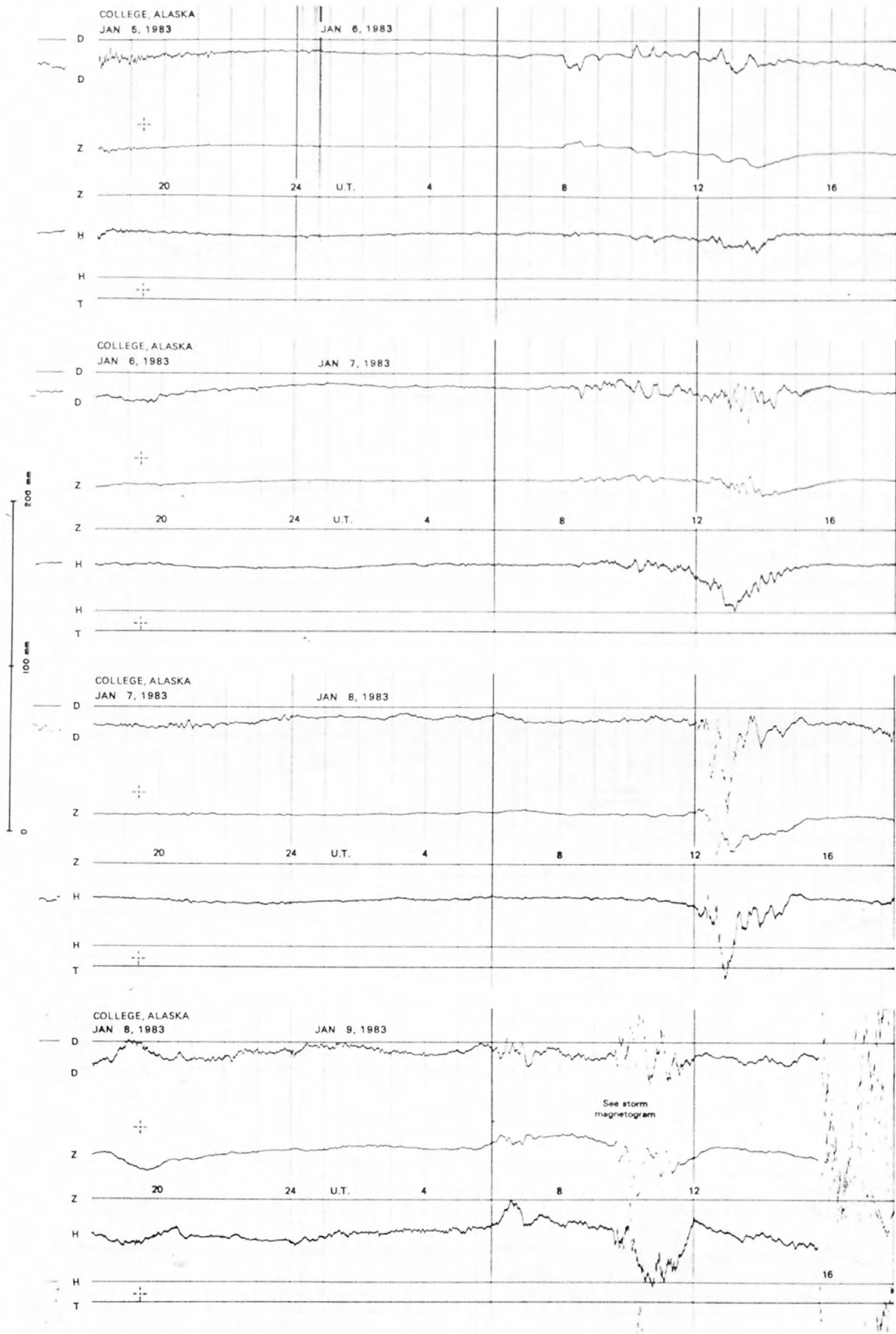


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

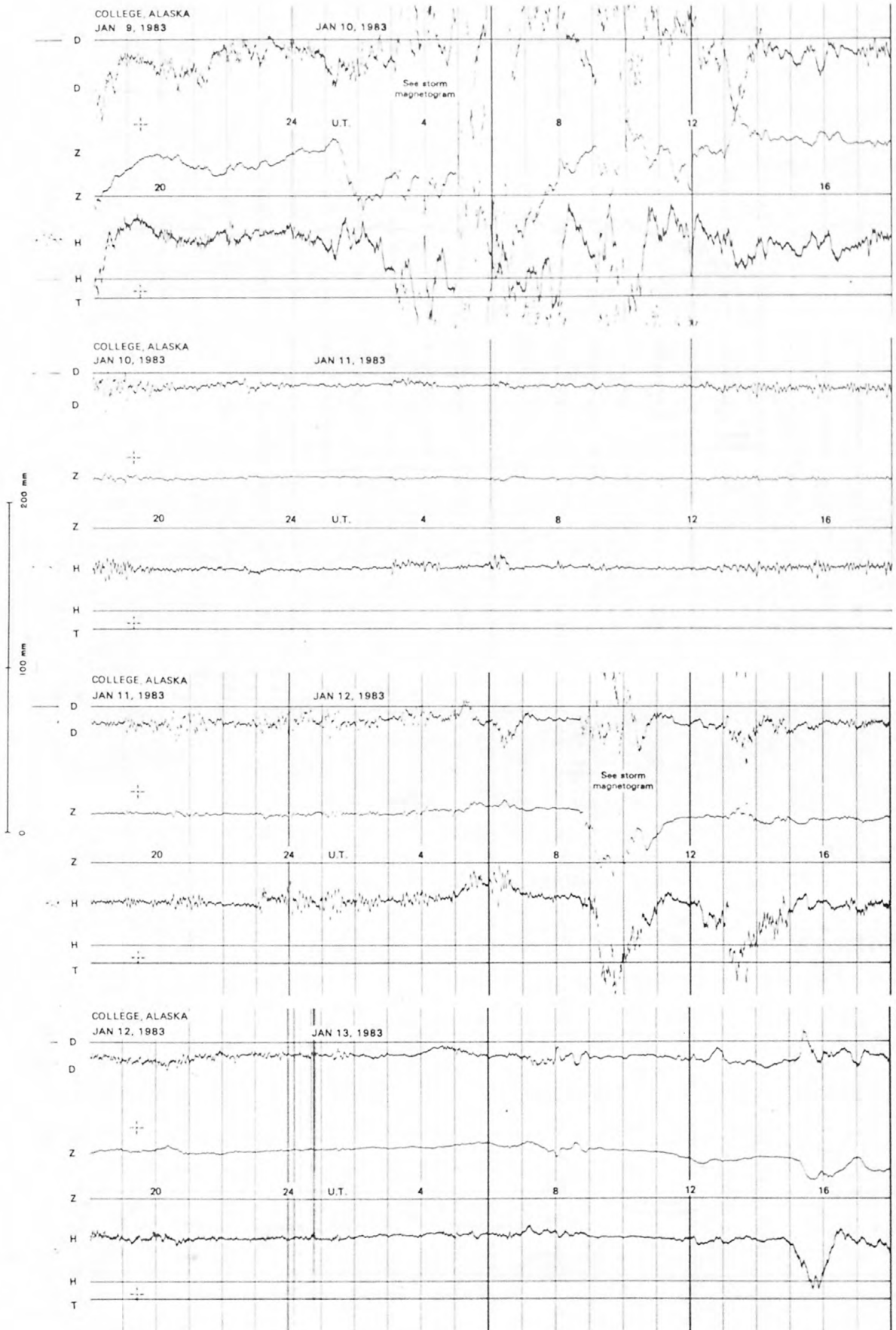


NORMAL MAGNETOGRAMS

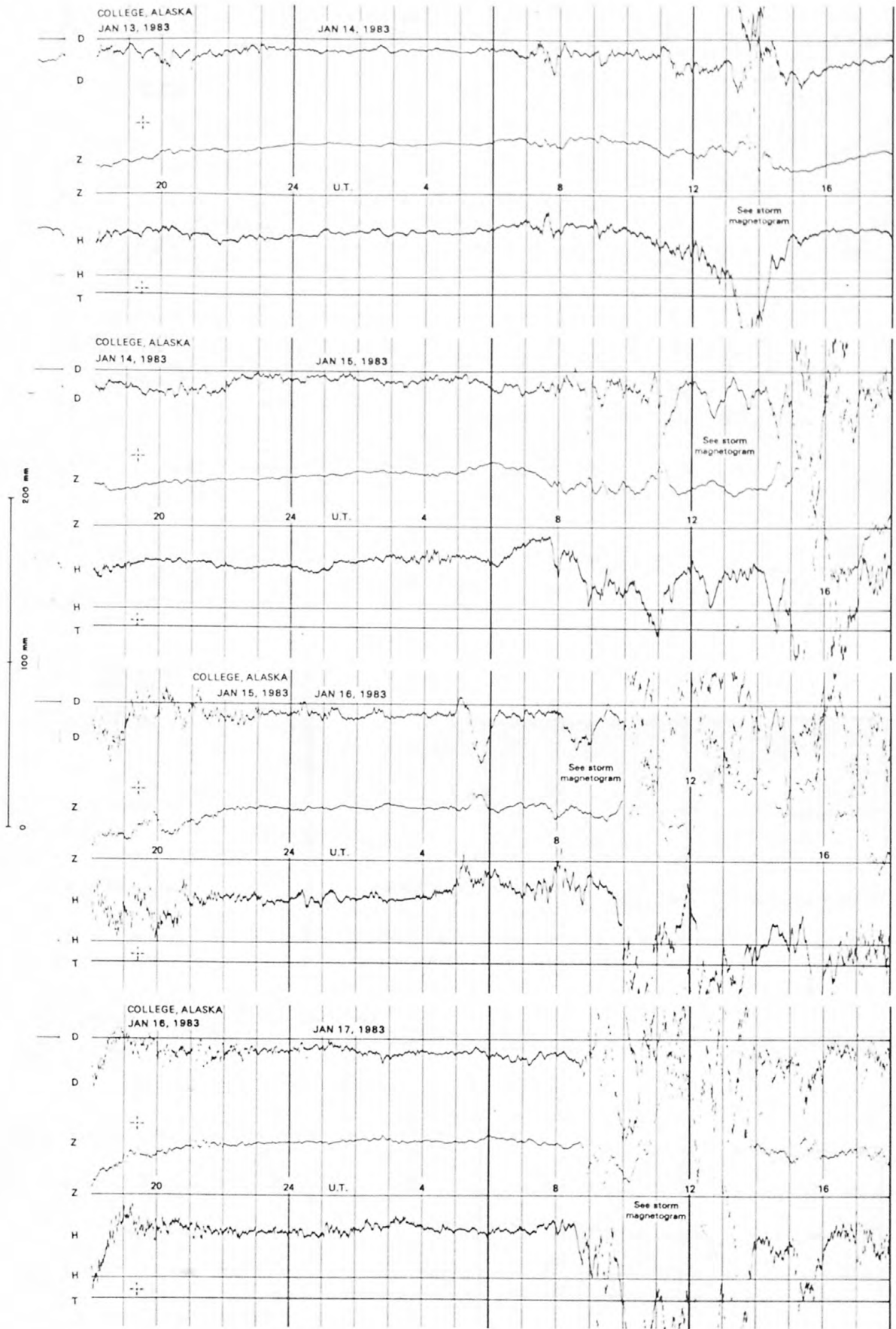




NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

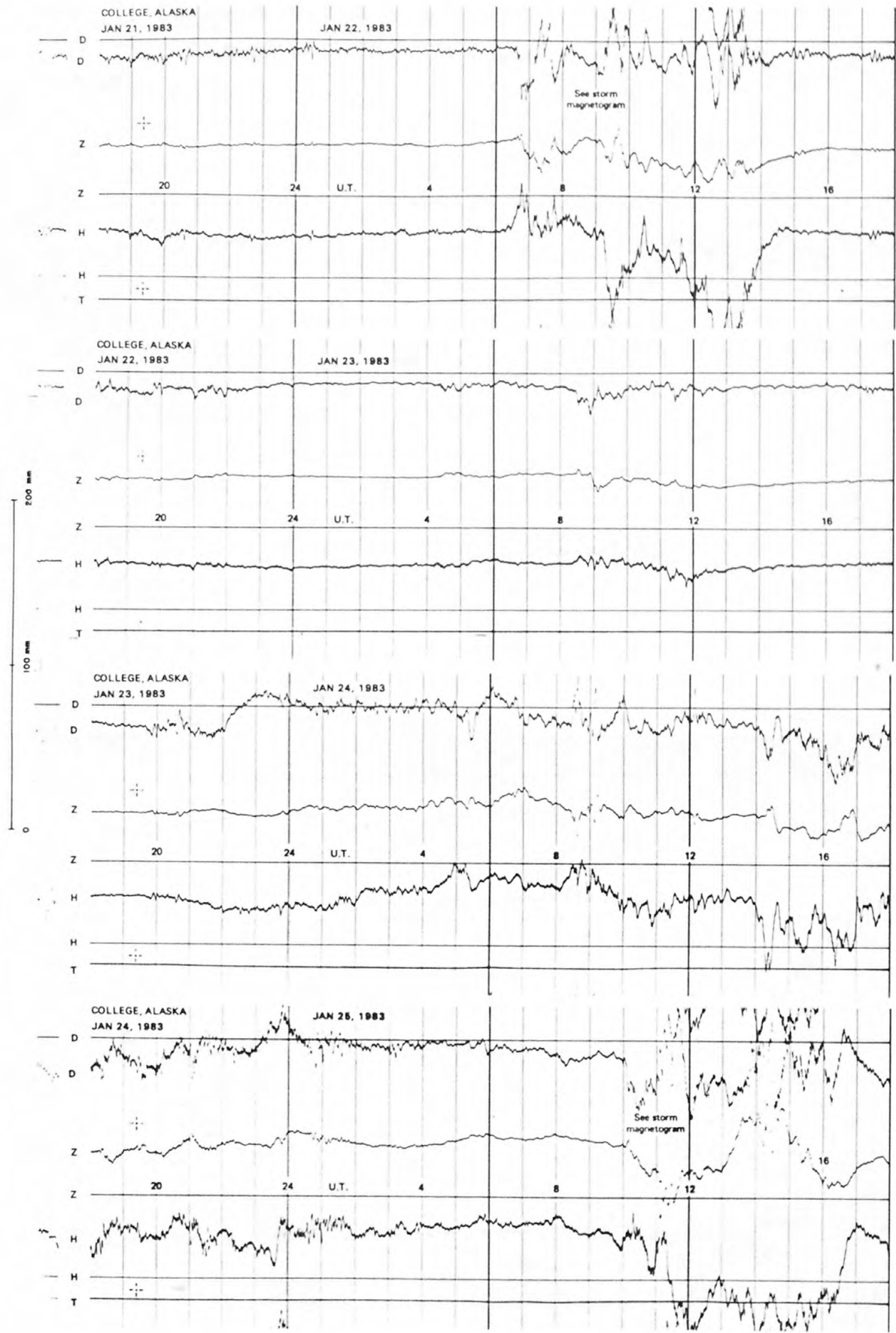


NORMAL MAGNETOGRAMS

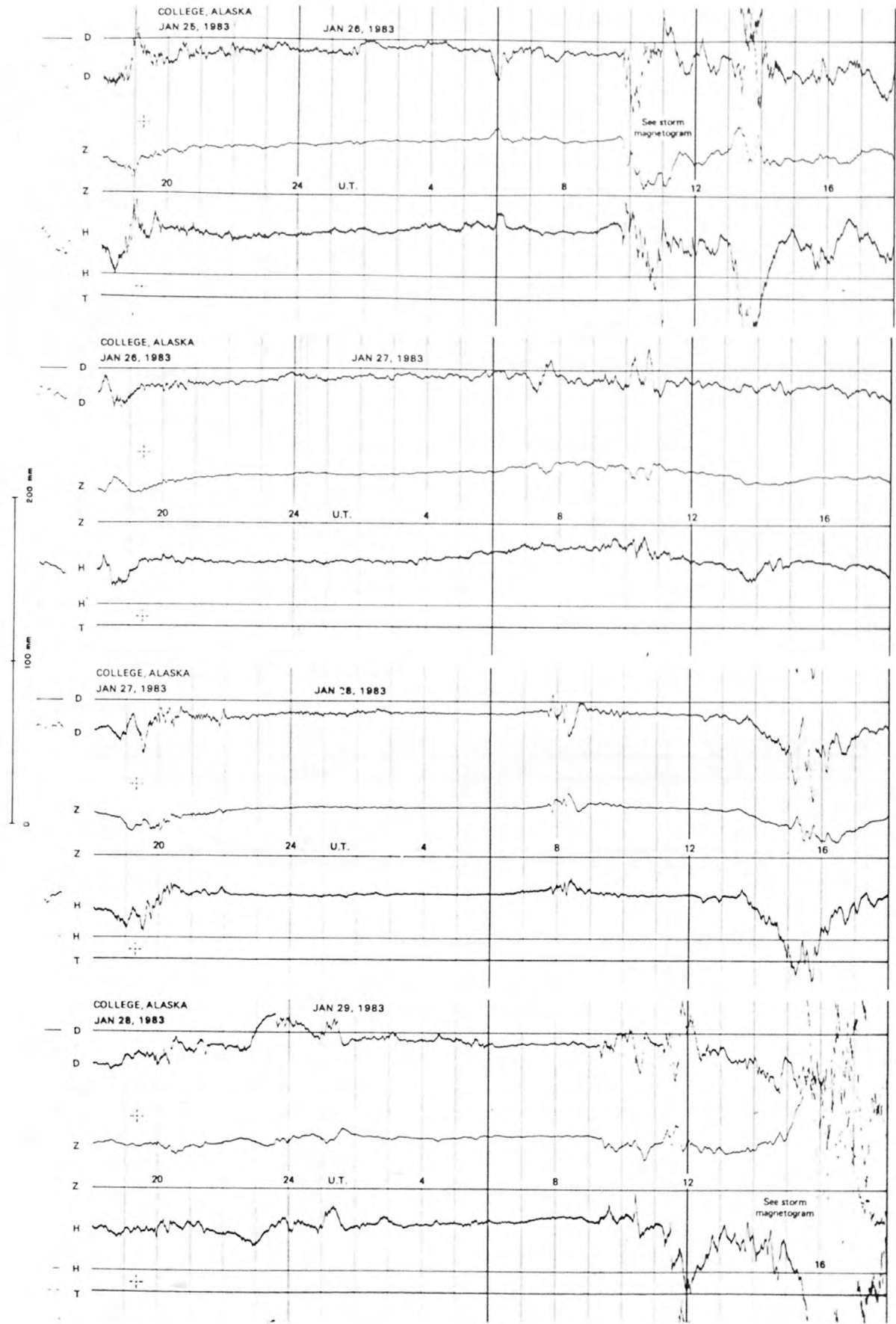




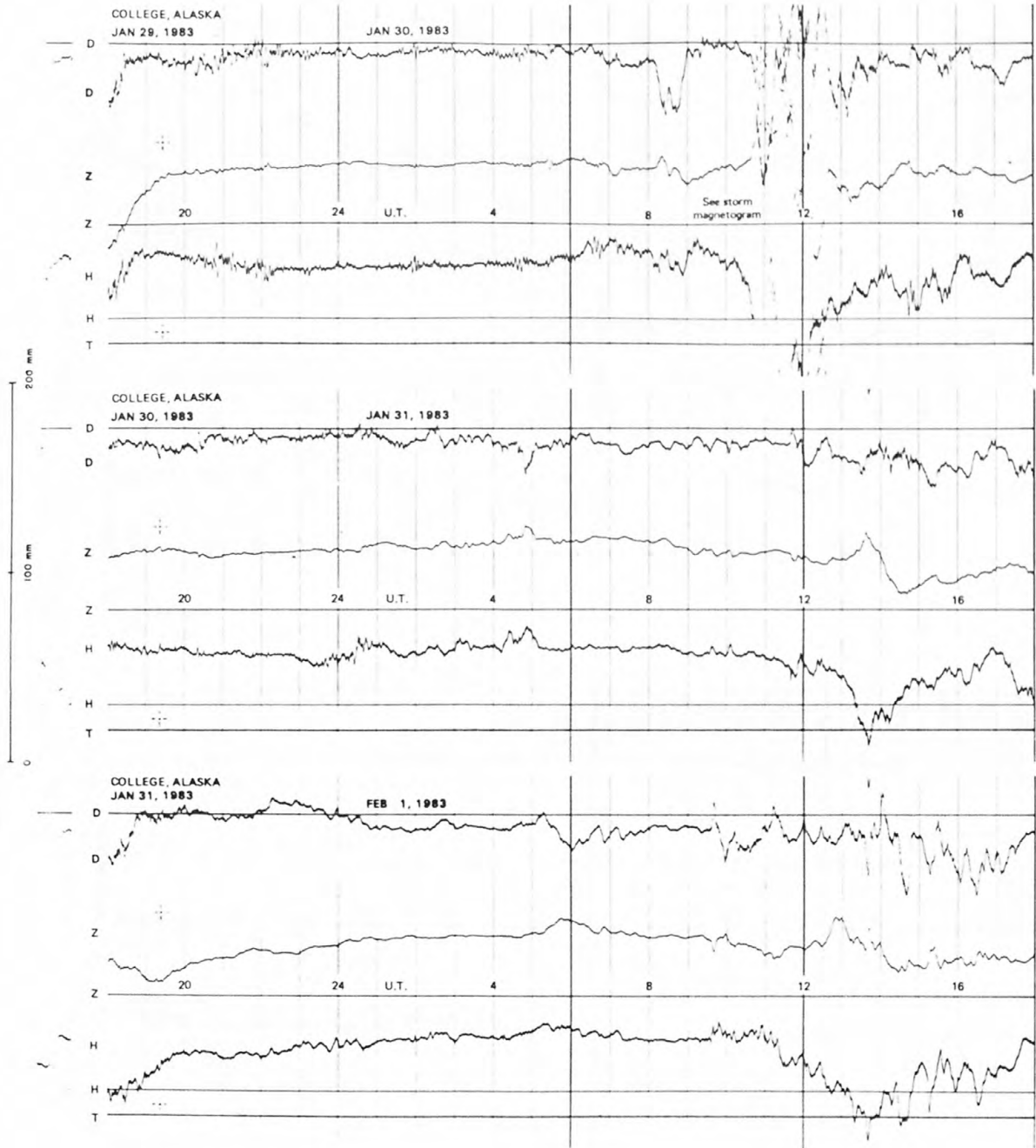
NORMAL MAGNETOGRAMS



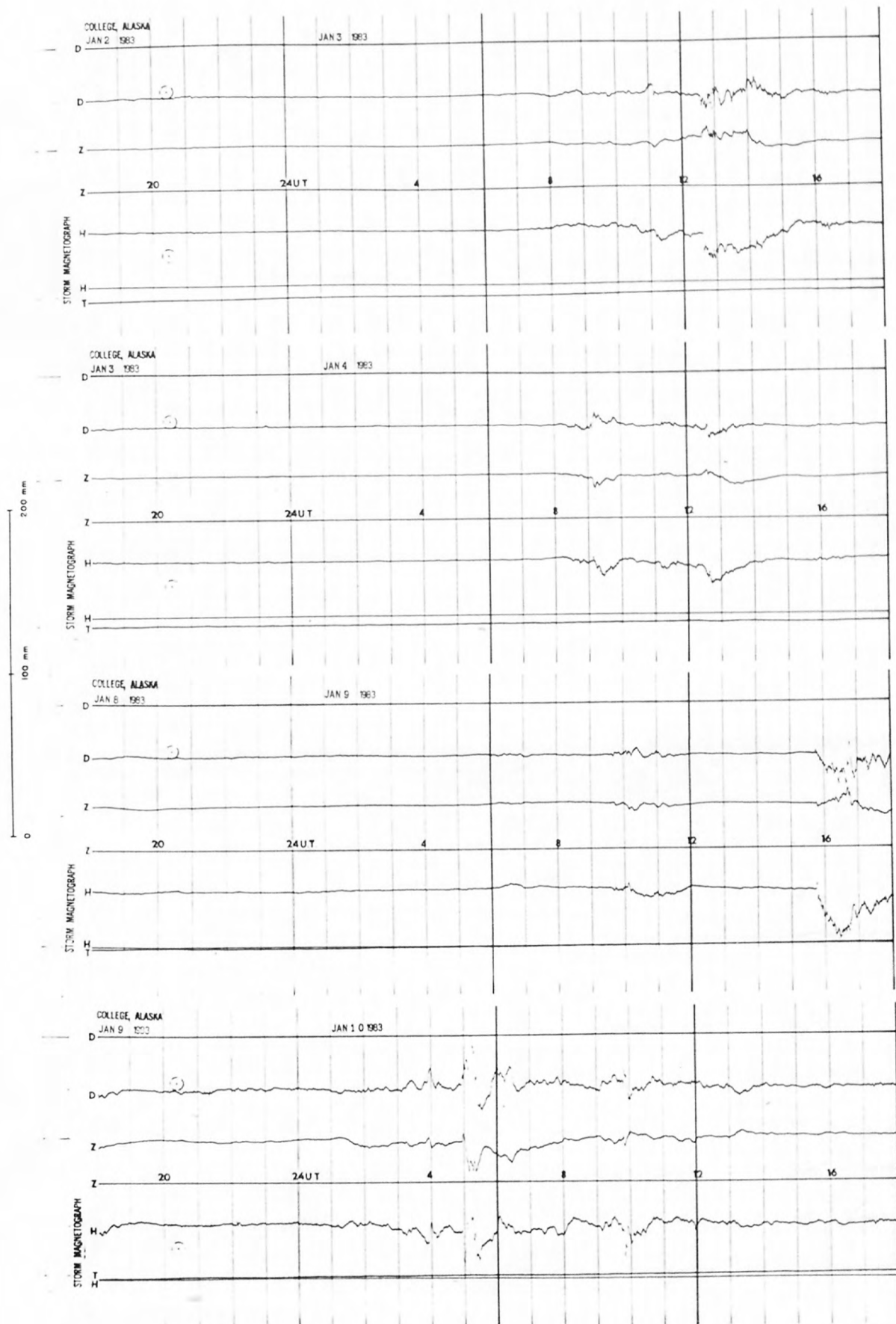
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

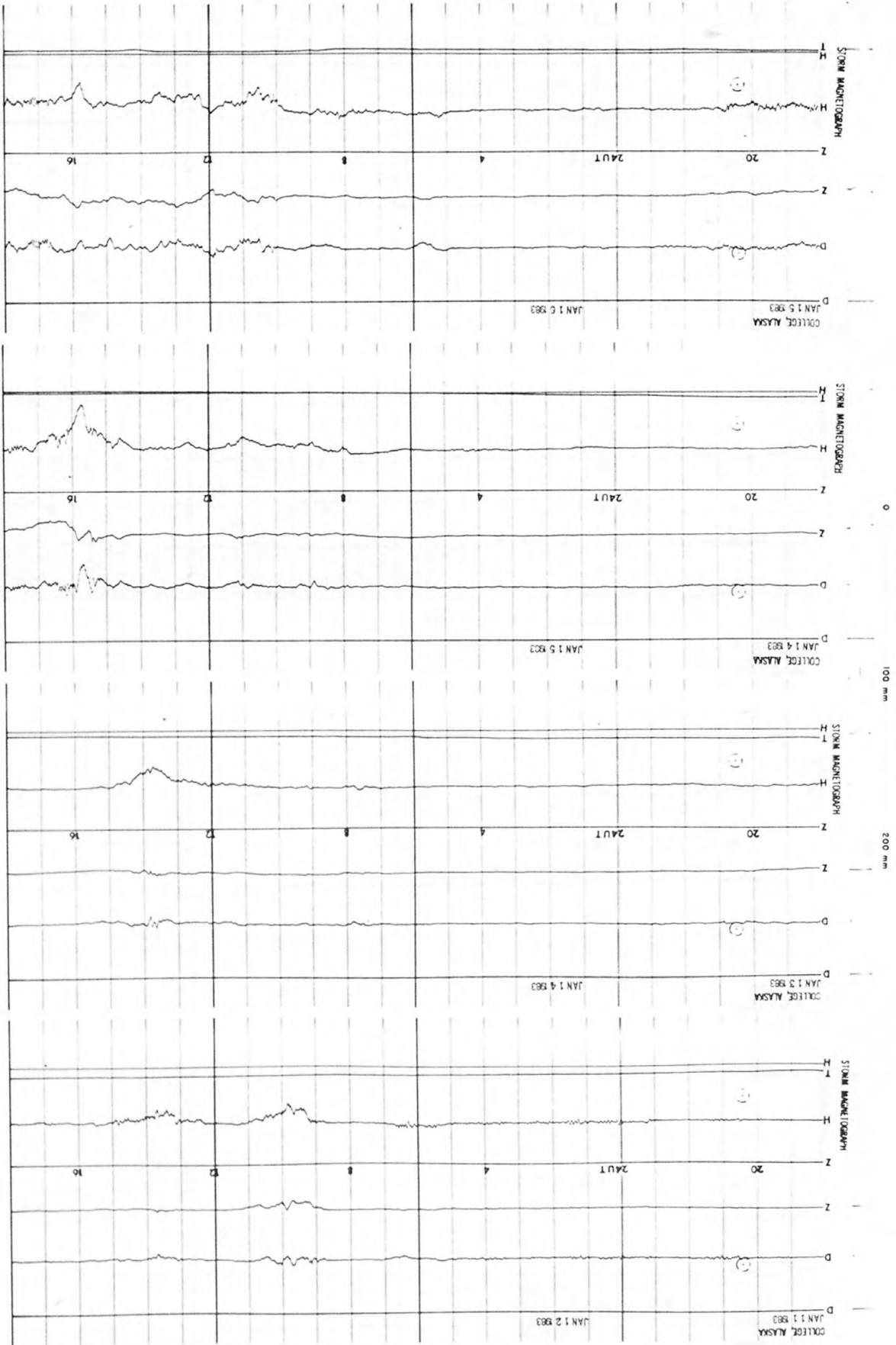


# STORM MAGNETOGRAMS

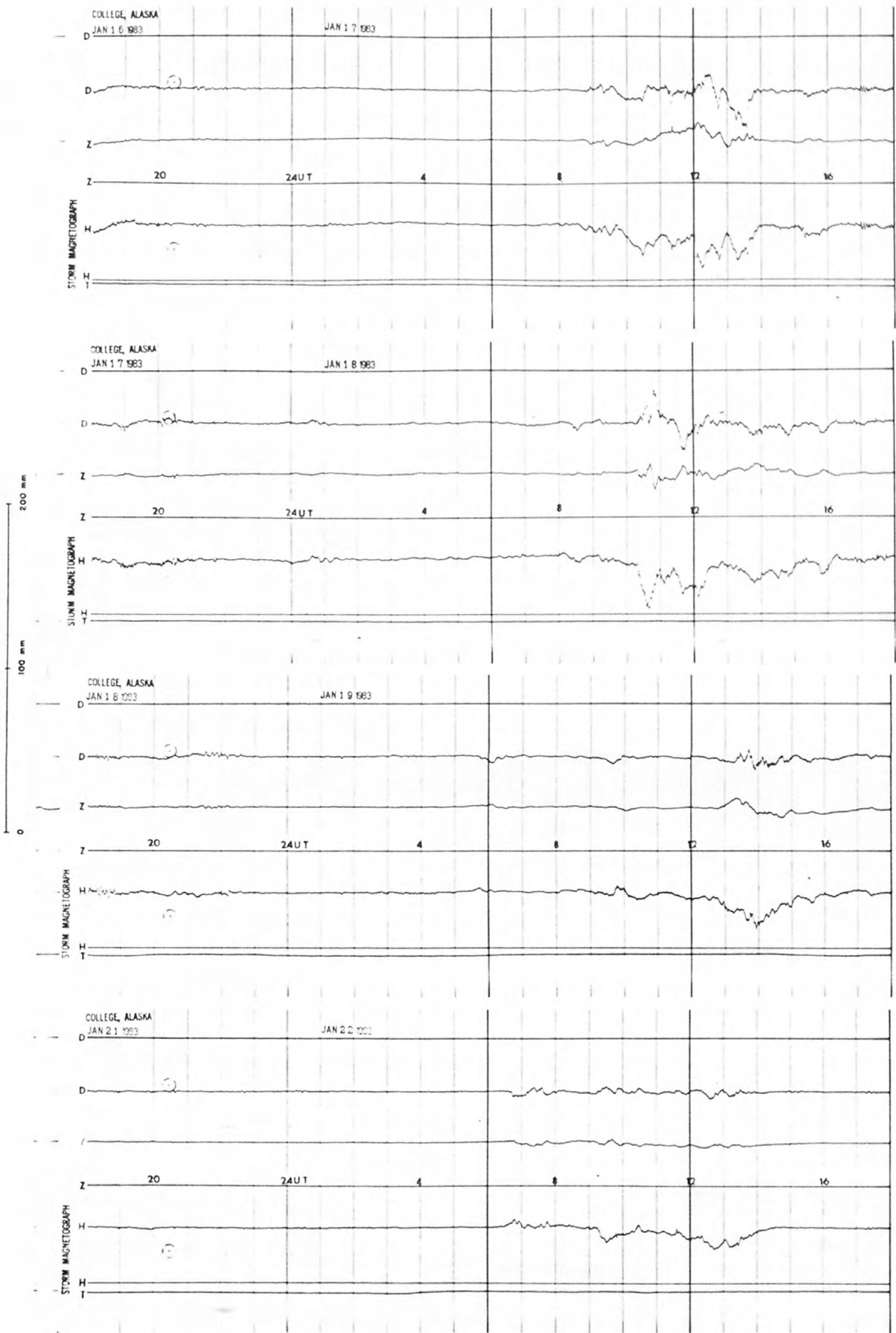




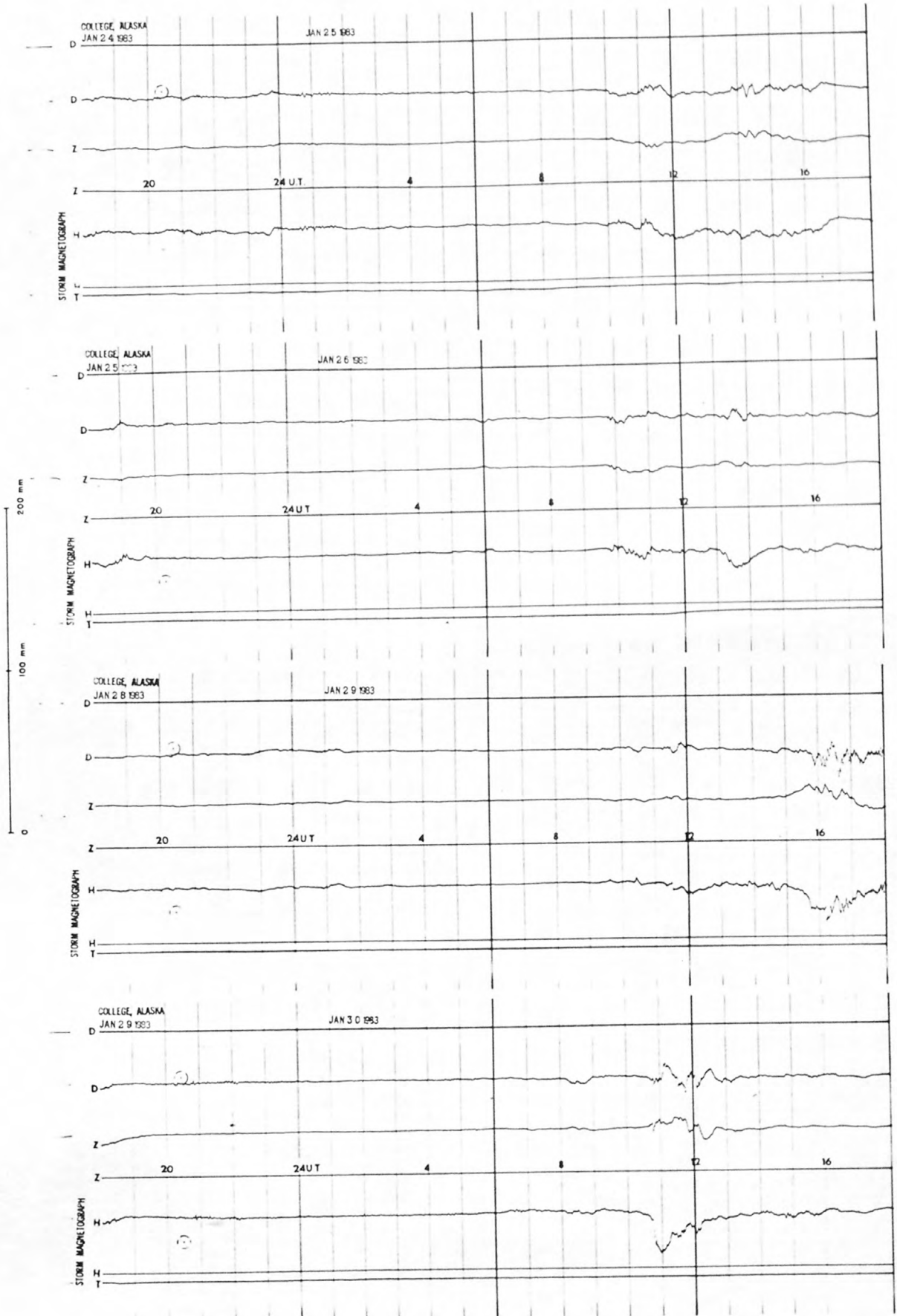
# STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



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